

(No Model.)

E. FORD.
AUGER BIT.

No. 461,897.

Patented Oct. 27, 1891.

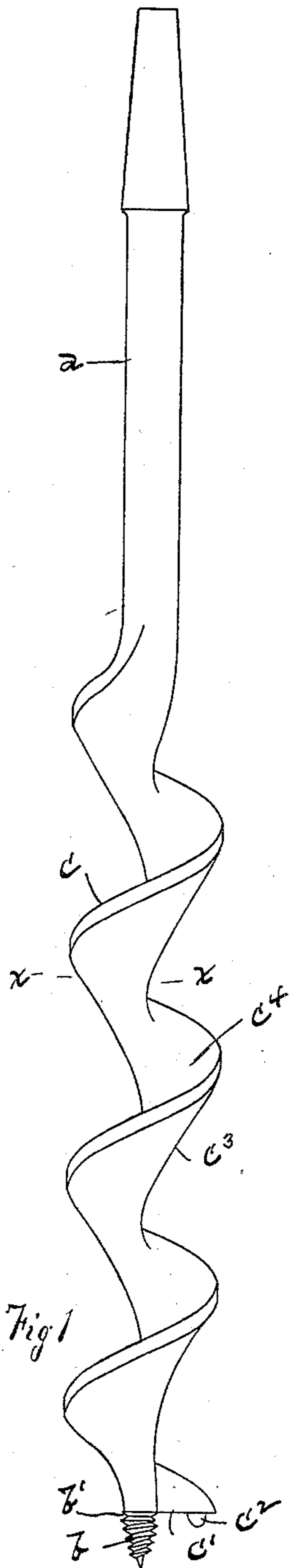


Fig 1.

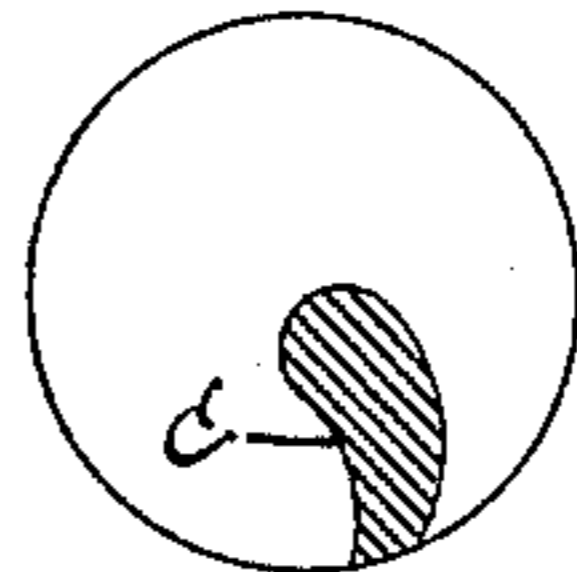


Fig 3.

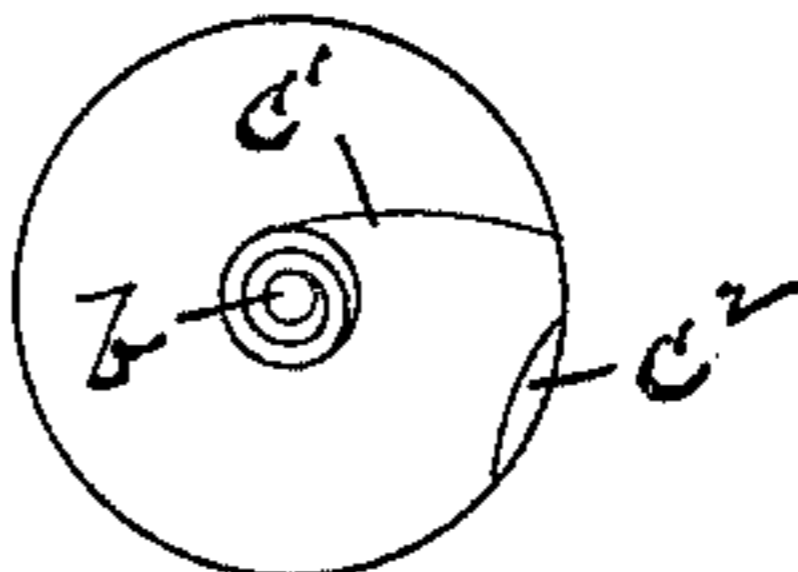


Fig 4.

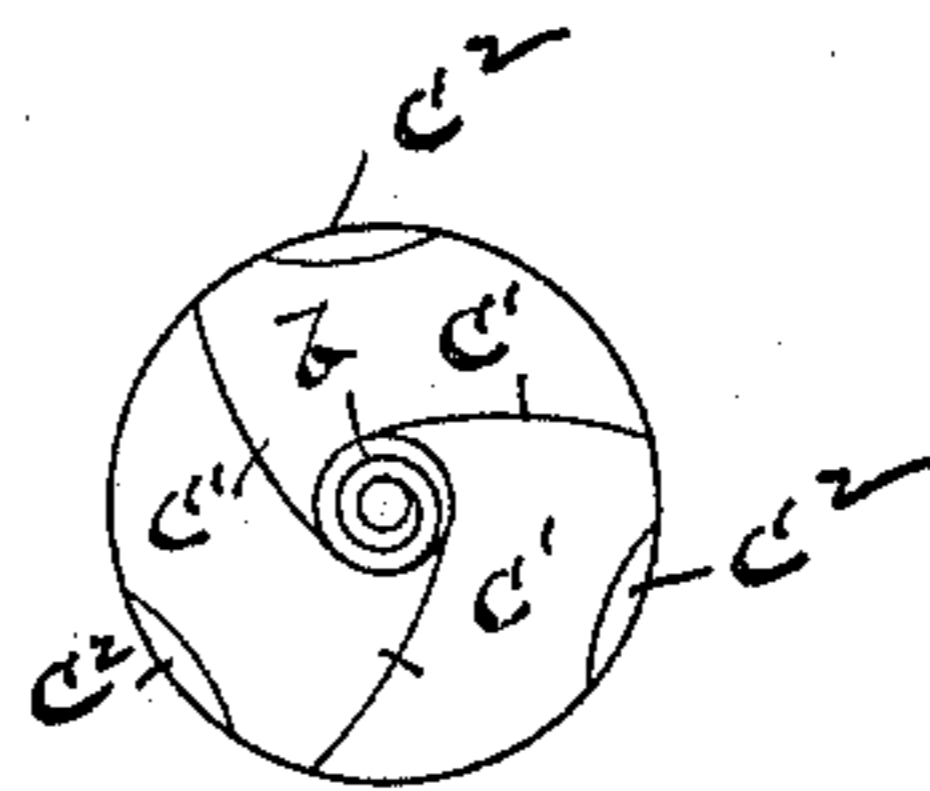


Fig 5.

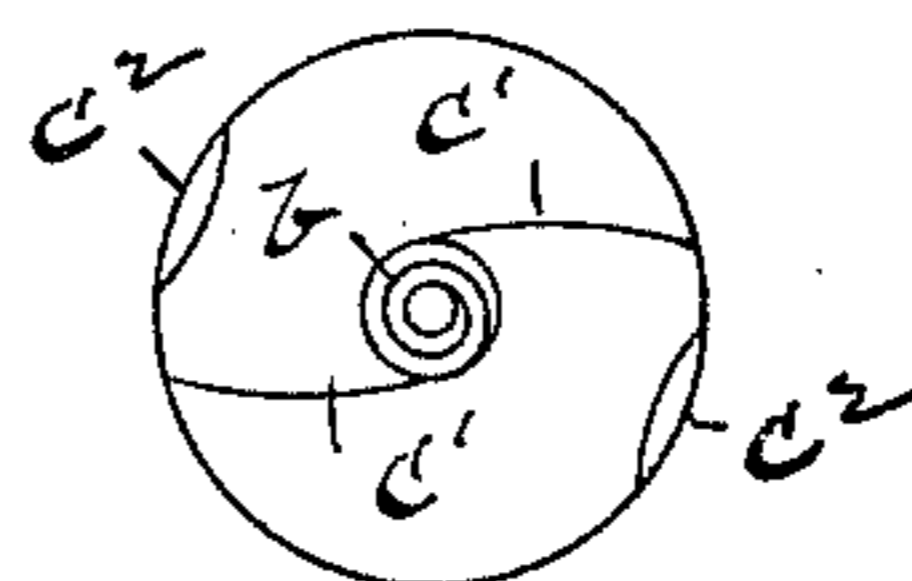


Fig 6.

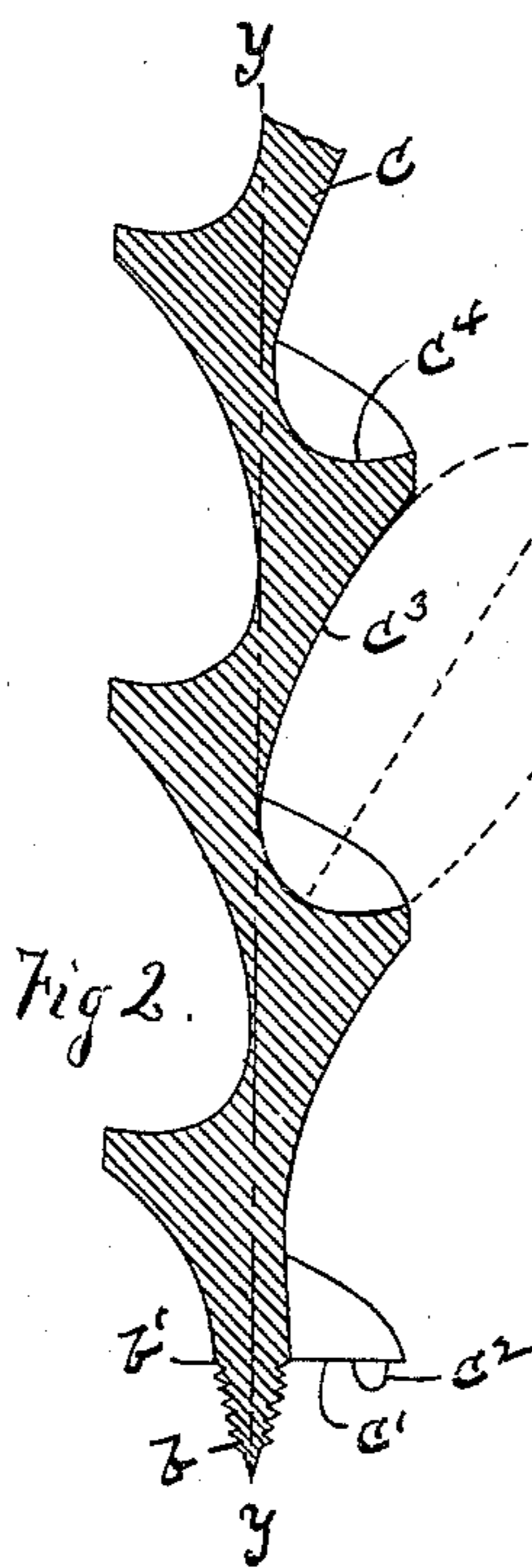


Fig 2.

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UNITED STATES PATENT OFFICE.

ELLSWORTH FORD, OF NEW HAVEN, CONNECTICUT.

AUGER-BIT.

SPECIFICATION forming part of Letters Patent No. 461,897, dated October 27, 1891.

Application filed September 3, 1890. Serial No. 363,857. (No model.)

To all whom it may concern:

Be it known that I, ELLSWORTH FORD, of the city and county of New Haven, and State of Connecticut, have invented a new and useful Improvement in Auger-Bits, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

The object of my invention is to provide an auger or auger-bit of such form that it will enter the material in which a hole is to be made more easily and will discharge the chips formed thereby more readily than has been the case with such tools as heretofore constructed and which will at the same time possess great strength and rigidity.

A further object is to facilitate the formation of the gimlet-point upon tools of this character without danger of marring the cutting-edge of the blade or blades thereof and without impairing the capacity of said gimlet-point to draw the tool into the material when a hole is being bored.

To these ends my invention consists in the auger or auger-bit constructed and operating as hereinafter fully described, and particularly pointed out in the claims.

Referring to the drawings, in which like letters designate like parts in the several figures, Figure 1 is a view of an auger-bit embodying my invention. Fig. 2 is a central longitudinal section of a portion thereof. Fig. 3 is a cross-section taken upon line $x x$ of Fig. 1. Fig. 4 is a view of the cutting end of said bit. Fig. 5 is a similar view showing the bit as being provided with three cutting-edges. Fig. 6, in a like view, shows the bit as being provided with two cutting-edges.

The letter a designates the stem or shank of the bit, b the gimlet-point thereof, and c the blade, which extends between said stem and said point and terminates at its lower end in the cutting-edge c' and preferably with the spread lip or tooth c^2 at the outer end of said cutting-edge.

The blade c , which is of the class known as "single-twist blades," is produced about the axial center of the bit in convolute or spiral form, and both its upper and lower sides extend to or substantially to said axial center, as represented in Fig. 2, in which the axial center is indicated by broken line $y y$. The

lower side c^3 of the blade extends from the axial center of the bit to the outer edge of the blade by a slightly inwardly-curved line, which forms an angle of substantially forty-five degrees with the axis $y y$, while the upper side c^4 , which is slightly concaved, stands at substantially a right angle to said axis, as clearly shown in Fig. 2. In other words, the line joining the outer edge of one convolution of the blade with the outer edge of the adjoining convolution in a central vertical section of the bit forms the segment of an ellipse divided by a line drawn at an angle of substantially forty-five degrees to its transverse axis, as represented by broken lines in Fig. 2. The blade is slightly thickened at its outer edge, thereby giving to the tool great strength and rigidity, said outer edge extending from the upper to the lower side of the blade in a plane parallel with the axis of the tool. The concavity of the substantially horizontal upper side of the blade and the peculiar curvature of the lower side thereof, as described, together with the fact that both of said sides extend to or substantially to the axial line of the tool, not only secure a very deep channel for the chips produced, but cause said chips to be forced toward the center of the tool and away from the inner surface of the hole being made, in such manner that the tool can be driven into any kind of wood with ease and rapidity and for its entire length without being choked by the chips, there being substantially no friction between the chips and the surface of the hole.

In those augers or auger-bits in which the thread of the gimlet-point is continued rearwardly to the point where the blade commences it frequently happens that in cutting said thread the tool is brought into contact with the cutting-edge of the blade in such manner as to cause serious damage thereto, if it does not necessitate the formation of an entirely new cutting-edge on said blade. To obviate this difficulty I form at the base of the gimlet-point and immediately adjacent to the plane of the cutting-edge of the blade an annular groove b' , which in cross-section has substantially the dimensions of the thread on the gimlet-point and lead said thread into said groove at such a point that it will not

terminate directly in line with said cutting-edge of the blade, as shown in Fig. 1. Said annular groove can be readily made by any suitable tool without danger of touching the cutting-edge of the blade, and the thread on the gimlet-point can then be cut and led into said groove, as described, without bringing the thread-cutting tool into contact with said edge, while at the same time the dimensions of the groove are such that the action of the gimlet-point to draw the tool into the wood in boring a hole is not impaired in the least.

As shown in Figs. 1, 2, and 4, the bit is provided with a single cutting-edge c' ; but in Fig. 6 I have shown it as being provided with two and in Fig. 5 with three cutting-edges, the increased capacity for disposing of the chips secured by the described formation of the blade enabling me to use either number of cutting-edges. The additional cutting-edges are secured by forming lips or wings at the bottom of the bit, disposed radially to the axis thereof in a well-known manner—as shown, for example, in patent to Bailey, No. 413,159, dated October 22, 1889. I am thus enabled to utilize features of both single and double twist bits in a single device.

My invention is applicable to both augers and auger-bits, and by it their ease and rapidity of operation are materially enhanced.

I am aware that in patent to Curtiss, No. 14,752, dated April 22, 1856, is shown and described an auger in which a plane surface is left between the gimlet-point and the lower end of the blade; but in that case the width of such plane surface is so considerable as to materially impair the action of the gimlet-

point to draw the auger into the wood, whereas in my device, the width of the annular groove being substantially that of the thread itself and the same being located directly adjacent to the plane of the lower end of the blade, the normal action of the gimlet-point is left unimpaired.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An auger-bit having a single convolute blade terminating at its lower end in a cutting-edge, said blade having its lower side extending from the outer edge thereof to or substantially to the axial center of the bit by a slightly inwardly-curved line and at an angle of substantially forty-five degrees to the axis of the bit, its upper side extending from the outer edge thereof to or substantially to the axial center at substantially a right angle to the axis and made slightly concave transversely and having the outer edge thereof slightly thickened, substantially as described.

2. An auger-bit having a convolute blade and a gimlet-point and having therein an annular groove located immediately adjacent to the plane of the lower end of said blade, into which groove the thread of said gimlet-point leads, the dimensions of said groove in cross-section corresponding substantially with those of said thread, substantially as and for the purpose set forth.

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